

A PLANAR LIGHTWAVE CIRCUIT ACTIVE DEVICE METALLIZATION
PROCESS

ABSTRACT OF THE DISCLOSURE

A method for making a resistive heater for a planar lightwave circuit. The
5 method includes the step of depositing a resistive layer on a top clad of a planar
lightwave circuit. An interconnect layer is subsequently deposited over the
resistive layer. The resistive layer can be tungsten and the interconnect layer
can be aluminum. The interconnect layer is then etched to define a heater
interconnect, wherein the heater interconnect is disposed over the resistive layer
10 and has a first width. The heater interconnect is then masked, and the resistive
layer is etched to define a resistive heater. The resistive heater is disposed
beneath the heater interconnect and has a second width larger than the first
width. The heater interconnect is defined to include a heater conduct region
between a first contact pad and a second contact pad such that a current
15 between the first contact pad and the second contact pad is conducted through
the resistive heater, thereby generating heat which is conducted into the top clad
of the planar lightwave circuit. The difference between the first width of the
heater interconnect and the larger second width of the underlying resistive
heater is determined to decrease an alignment sensitivity of a lithography
20 process for masking the heater interconnect. A dry etch process can be used to
etch the aluminum interconnect layer and/or the tungsten resistive layer. The dry
etch process can be a reactive ion etching process. A wet etch process can be
used to etch the aluminum interconnect layer, wherein the wet etch process does
not attack the tungsten.